

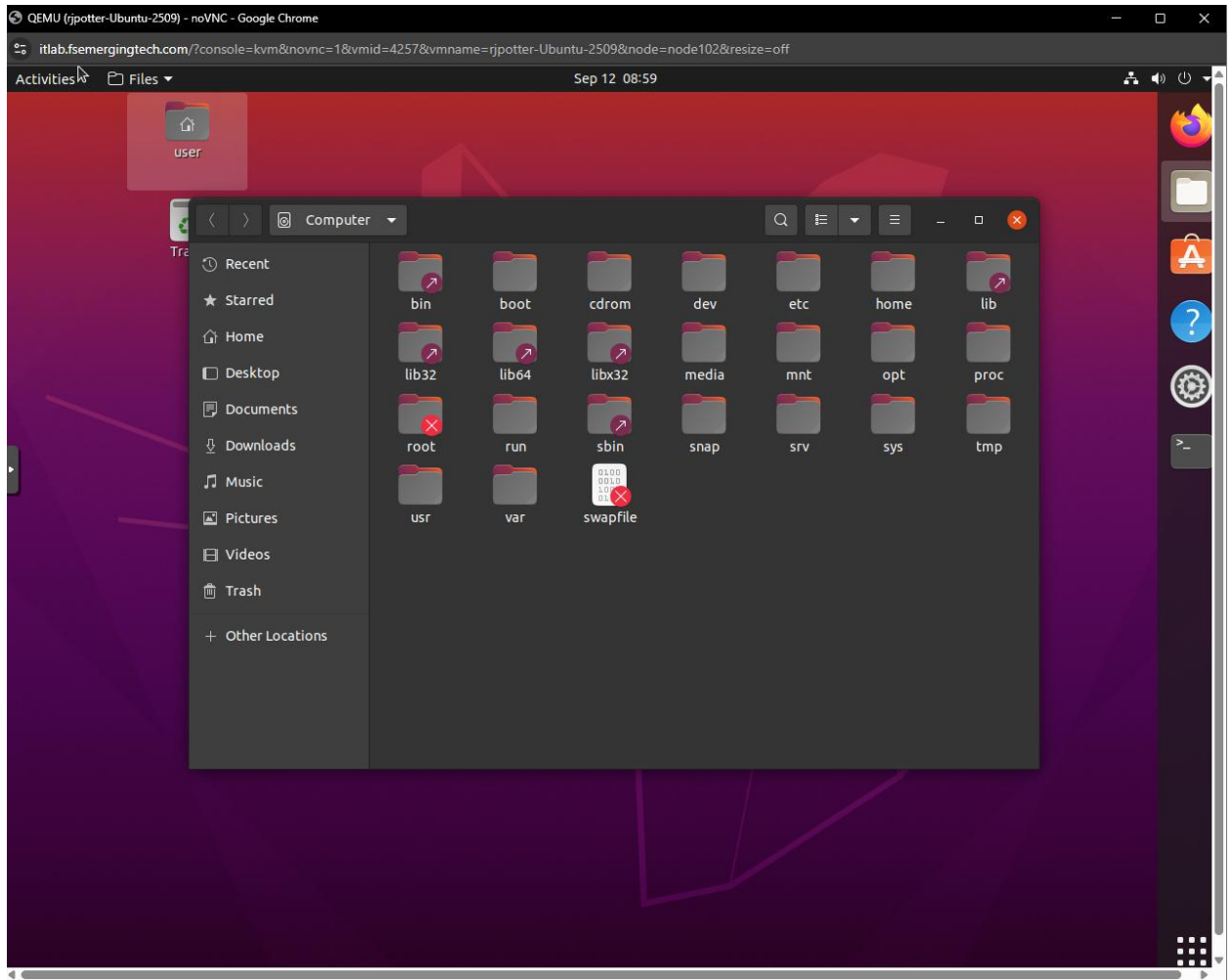
1. Explain in writing the type of kernel and multitasking used in Linux

Linux uses a Monolithic kernel, which communicates with all the hardware and software while controlling the system's resources. It relies on drivers to interact with hardware and uses other applications to complete tasks for the user. Linux is a preemptive multitasking operating system, meaning it can manage and execute multiple processes and threads concurrently. It achieves multitasking through a technique called time-slicing, where the kernel's scheduler rapidly switches the CPU's attention, allocating small timeslots to each process. This is done in a round-robin manner, ensuring every process gets a turn before any task receives a second turn. On multi-core systems, Linux can run multiple threads simultaneously to increase performance.

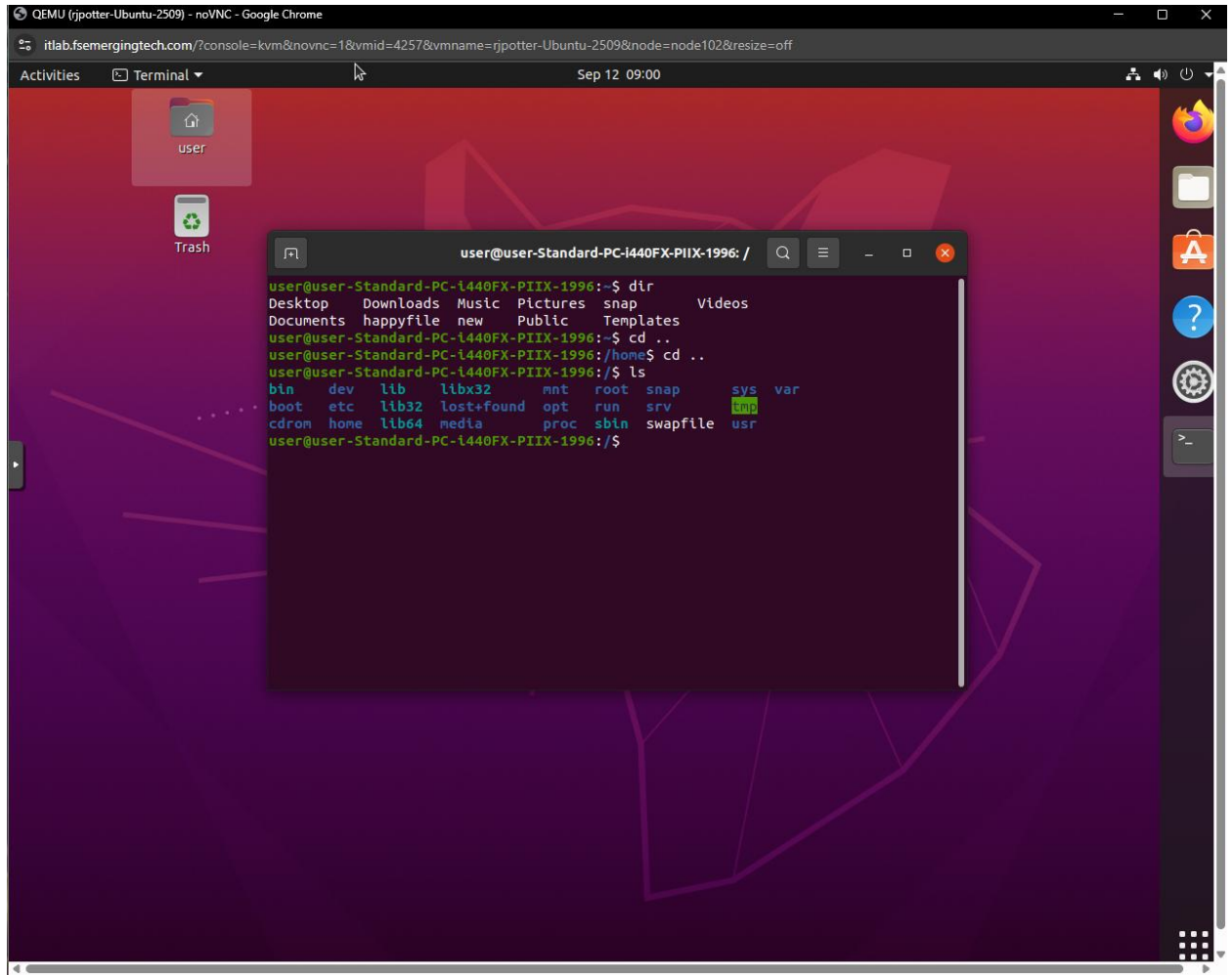
2. Explain in writing the differences and similarities between the GUI and the CLI

The main differences between the CLI and the GUI are that the CLI is text-based, while the GUI is graphical. This makes the GUI much more beginner-friendly, whereas the CLI requires more practice to become proficient. Some of the similarities are that both allow the user to issue commands to the computer and both provide access to the operating system's core functions, such as file management, running programs, and configuring system settings.

3. Screenshot navigating the file structure in the GUI in Ubuntu



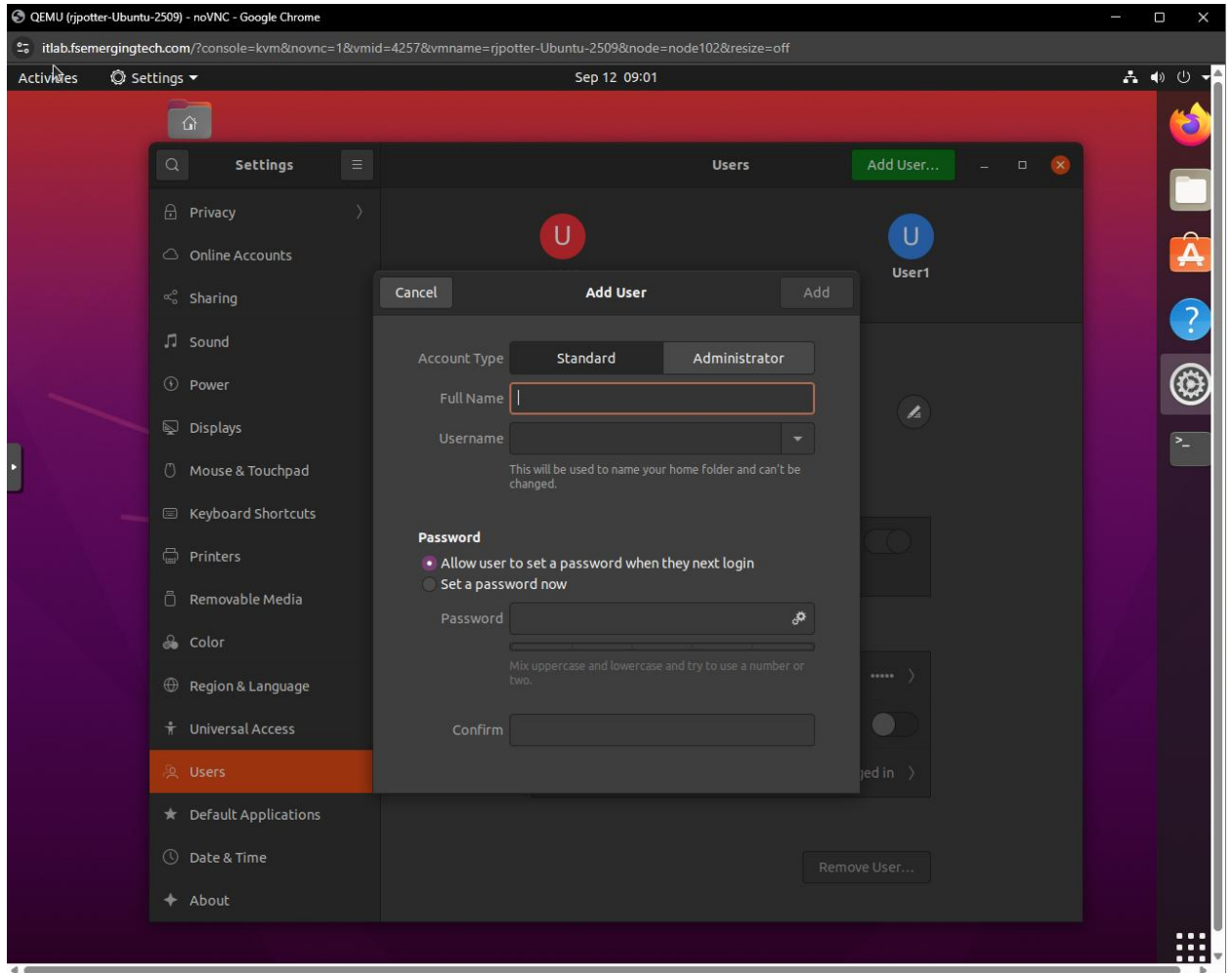
4. Screenshot navigating the file structure in the CLI in Ubuntu



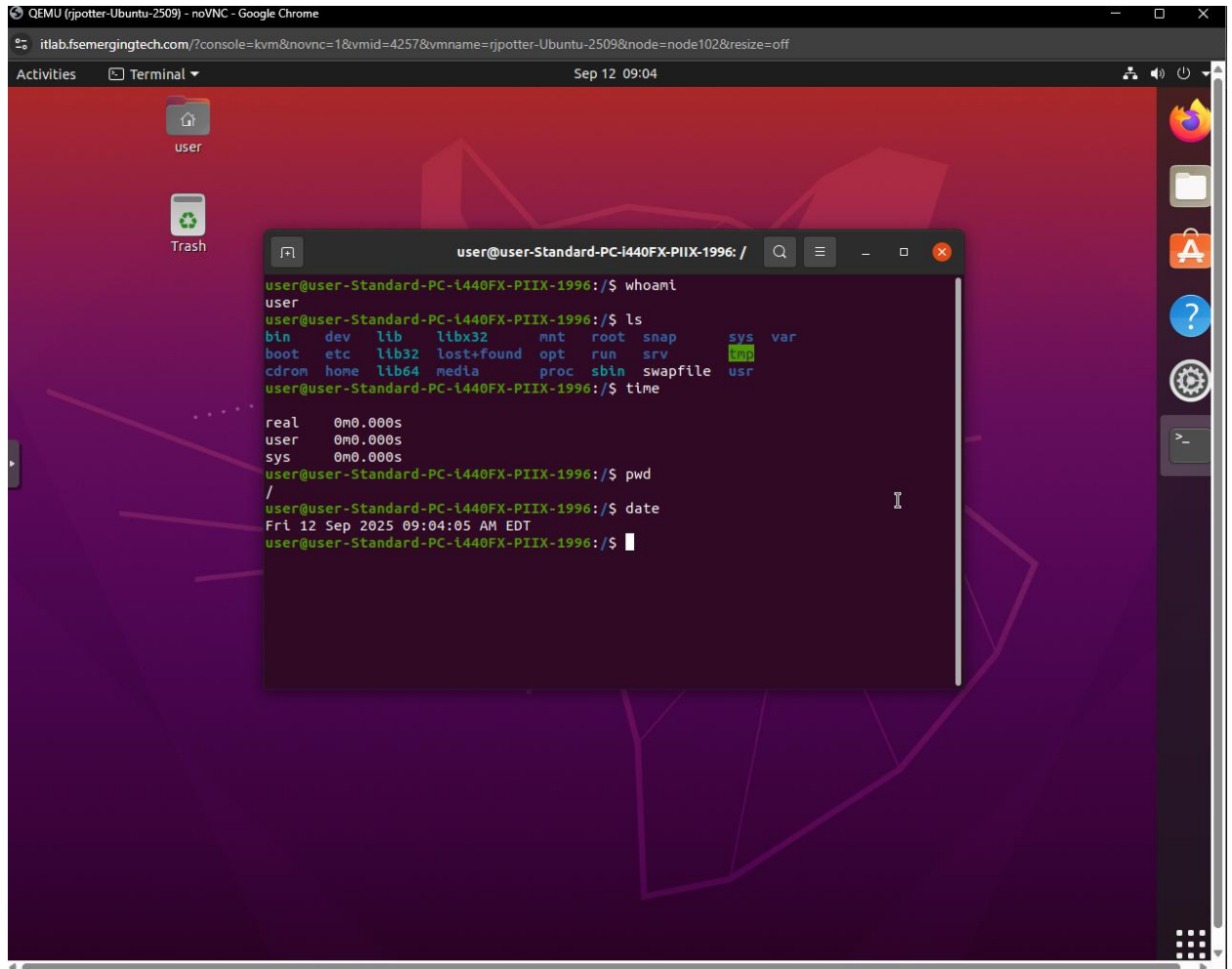
The screenshot shows a QEMU virtual machine window titled "QEMU (rjpotter-Ubuntu-2509) - noVNC - Google Chrome". The address bar displays the URL "itlab.fsemergingtech.com/?console=kvm&novnc=1&vmid=4257&vmname=rjpotter-Ubuntu-2509&node=node102&resize=off". The desktop environment is Ubuntu 25.09, featuring a purple and red background with a geometric pattern. A terminal window is open, displaying the following commands and output:

```
user@user-Standard-PC-i440FX-PIIX-1996: /  
user@user-Standard-PC-i440FX-PIIX-1996:~$ dir  
Desktop  Downloads  Music  Pictures  snap  Videos  
Documents  happyfile  new  Public  Templates  
user@user-Standard-PC-i440FX-PIIX-1996:~$ cd ..  
user@user-Standard-PC-i440FX-PIIX-1996:/home$ cd ..  
user@user-Standard-PC-i440FX-PIIX-1996:/ $ ls  
bin  dev  lib  libx32  mnt  root  snap  sys  var  
boot  etc  lib32  lost+found  opt  run  srv  tmp  
cdrom  home  lib64  media  proc  sbin  swapfile  usr  
user@user-Standard-PC-i440FX-PIIX-1996:/$
```

5. Screenshot how to create a standard user account in Ubuntu



6. Screenshot using 5 different commands in Ubuntu



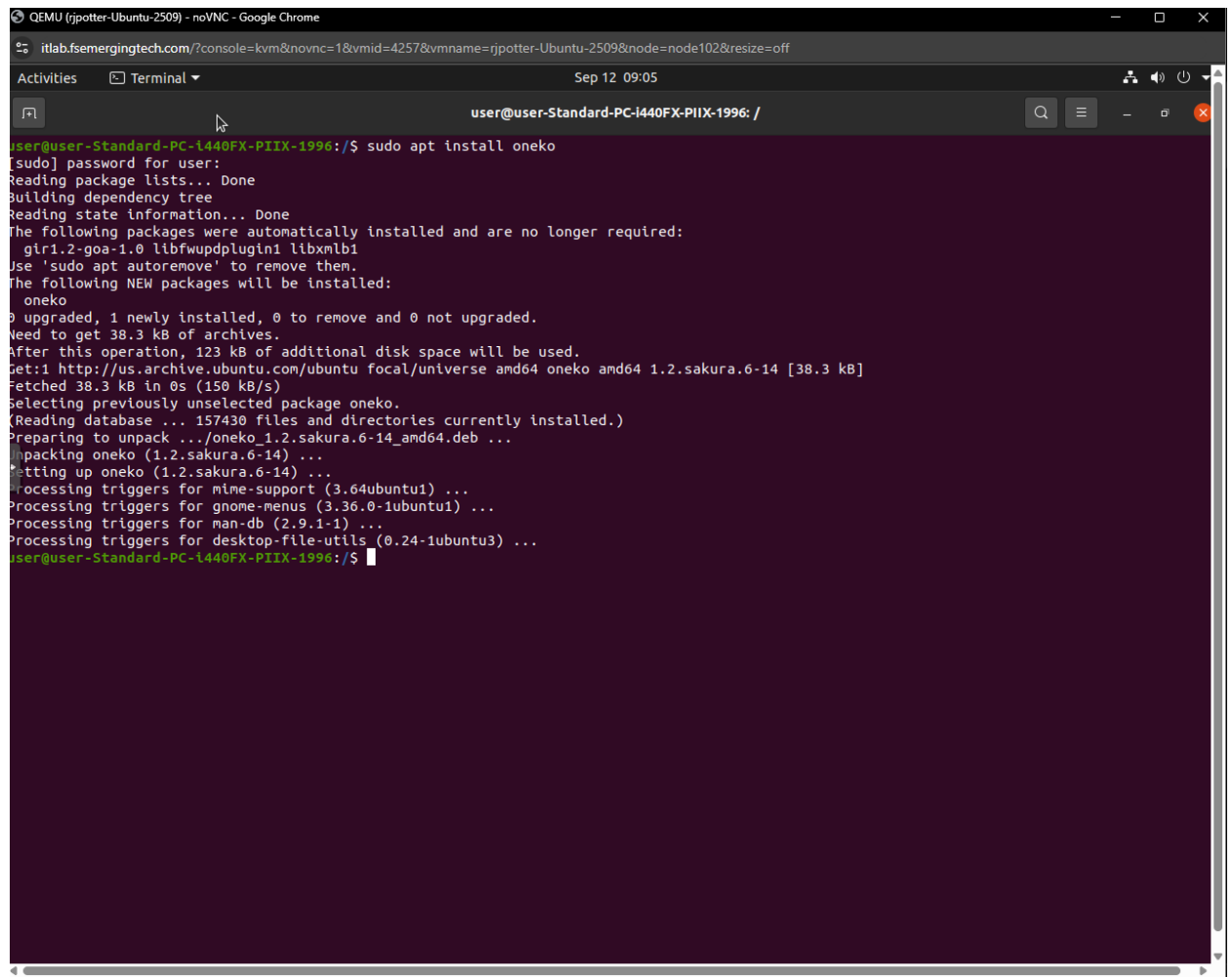
The screenshot shows a terminal window titled "user@user-Standard-PC-i440FX-PIIX-1996: /" running five different commands. The background is the Ubuntu desktop environment with a red and purple theme. The terminal output is as follows:

```
user@user-Standard-PC-i440FX-PIIX-1996:/$ whoami
user
user@user-Standard-PC-i440FX-PIIX-1996:/$ ls
bin  dev  lib  libx32  mnt  root  snap  sys  var
boot  etc  lib32  lost+found  opt  run  srv  tmp
cdrom  home  lib64  media  proc  sbin  swapfile  usr
user@user-Standard-PC-i440FX-PIIX-1996:/$ time

real    0m0.000s
user    0m0.000s
sys     0m0.000s
user@user-Standard-PC-i440FX-PIIX-1996:/$ pwd
/
user@user-Standard-PC-i440FX-PIIX-1996:/$ date
Fri 12 Sep 2025 09:04:05 AM EDT
user@user-Standard-PC-i440FX-PIIX-1996:/$
```

7. Screenshot how to use the *sudo* command in Ubuntu (Example where we need to use

sudo)



The screenshot shows a terminal window titled "QEMU (rjpotter-Ubuntu-2509) - noVNC - Google Chrome". The address bar shows a URL from "itlab.fsemergingtech.com". The terminal window has a title bar with "Activities", "Terminal", and a clock showing "Sep 12 09:05". The terminal prompt is "user@user-Standard-PC-i440FX-PIIX-1996: /". The user has entered the command "sudo apt install oneko". The terminal output shows the password prompt, package list reading, dependency tree building, and state information reading. It lists packages to be removed (gir1.2-goa-1.0, libfwupdplugin1, libxmb1) and the new package to be installed (oneko). It shows the disk space requirements and the fetching of the package from the Ubuntu archive. The installation process is shown as unpacking and setting up the package, followed by processing triggers for various system components.

```
user@user-Standard-PC-i440FX-PIIX-1996:/$ sudo apt install oneko
[sudo] password for user:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  gir1.2-goa-1.0 libfwupdplugin1 libxmb1
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  oneko
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 38.3 kB of archives.
After this operation, 123 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu focal/universe amd64 oneko amd64 1.2.sakura.6-14 [38.3 kB]
Fetched 38.3 kB in 0s (150 kB/s)
Selecting previously unselected package oneko.
(Reading database ... 157430 files and directories currently installed.)
Preparing to unpack .../oneko_1.2.sakura.6-14_amd64.deb ...
Unpacking oneko (1.2.sakura.6-14) ...
Setting up oneko (1.2.sakura.6-14) ...
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for desktop-file-utils (0.24-1ubuntu3) ...
user@user-Standard-PC-i440FX-PIIX-1996:/$
```

8. Screenshot how to install an application in Ubuntu (In the GUI or CLI)

